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CLAIMS

1. A phased array radio frequency pulse generator for producing a plurality of pulsed radio frequency electrical signals, including a plurality of radio frequency pulse generator units each having a non-linear dispersive electrical circuit incorporating at least one non-linear element including a material sensitive to low power signals and a means for producing a variable power control signal and applying the control signal to the at least one non-linear element to modify the extent of the non-linearity of the element and thereby vary the timing of the radio frequency electrical output signal generated, and means for adjusting the value of the control signals provided in each unit to vary the relative phases of the output signals from the radio frequency pulse generator units in a phased array on a pulse to pulse basis.
2. A generator according to claim 1, wherein each unit non-linear dispersive electrical circuit includes a plurality of non-linear elements in the form of inductors interconnected in series, a first array of coupling capacitors each linking the input side of one inductor to the output side of the next inductor in line

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for dispersive purposes, and a second array of capacitors arranged in parallel to one another such that each capacitor of the second array connects the input side of a different inductor to a common electrical line.

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3. A generator according to claim 1 ~~or claim 2~~, wherein the or each non-linear element material is a ferromagnetic material sensitive to a magnetic field and wherein the control signal producing means is operable to produce a relatively small variable electric current which gives rise to a variable low value magnetic field which is applied to the ferromagnetic material to adjust the initial state of the non-linear element and alter the behaviour of the non-linear element during modulation of a high power radio frequency signal to change the timing of the radio frequency signal outputted from the generator unit.
 4. A generator according to claim 3, wherein each control signal producing means includes a source of low power direct current which is applied to the input side of the non-linear dispersive electrical circuit with a high voltage input and which is returned to the source from

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the output side of the non-linear dispersive electrical circuit at the radio frequency signal output.

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5. A generator according to claim 1 ~~or claim 2~~, wherein the or each non-linear element material is ferroelectric material sensitive to an electric field and wherein each control signal producing means is operable to produce a variable low value electric field which is applied to the ferroelectric material to adjust the initial state of the non-linear element and alter the behaviour of the non-linear element during modulation of a high power radio frequency signal to change the timing of the radio frequency signal outputted from the generator unit.
 6. A generator according to claim 4, wherein the control signal adjusting means is a computer control linked to each source of low power direct current and operable to vary the value of the control signals provided in each unit.
 7. A phased array radio frequency pulse generator for producing a plurality of pulsed radio frequency electrical signals, substantially as hereinbefore described and as illustrated in Figures 1 and 3 as

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modified or not by Figure 2 of the accompanying drawings.

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